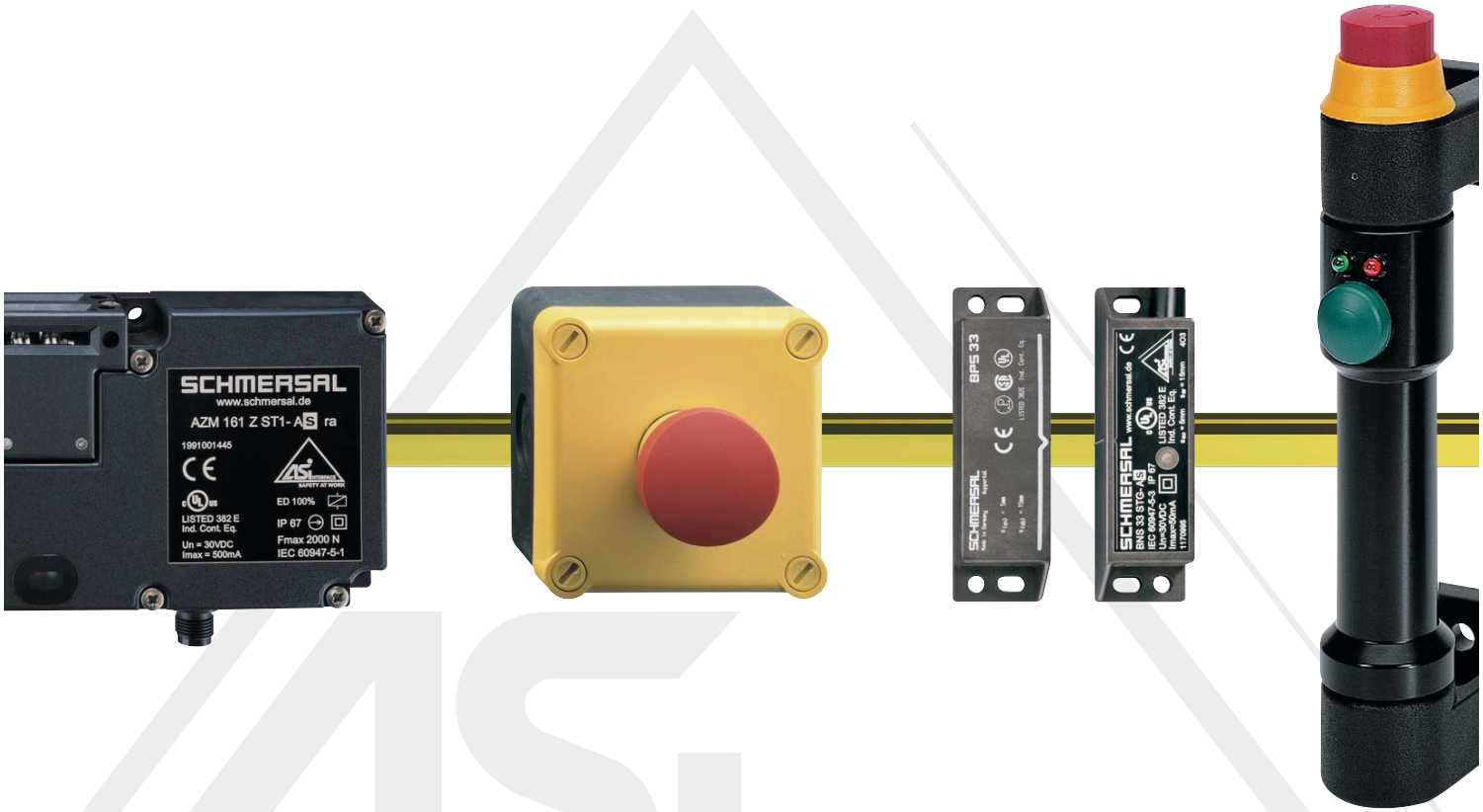
Safety Bus System
AS-Interface Safety at Work



AS-INTERFACE
SAFETY AT WORK

SCHMERSAL

IPEC Industrial Controls Ltd.
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Phone: 905-738-6688
www.ipecautomation.com

AS-Interface SaW

Easy and safe

AS-Interface Safety at Work (SaW) is the first safety bus system based upon the open standard of AS-International. Safety components such as Emergency Stop command devices, safety switches, solenoid interlocks or safety light barriers are simply connected to the yellow AS-Interface cable. For the evaluation of the safety signals a “Safety Monitor” is merely added to the AS-Interface system.

AS-Interface Standard in accordance with EN 50295
With the integration of AS-Interface SaW the AS-Interface network will continue to operate unchanged. The well known components, like the standard AS-Interface master, the standard power supply as well as the AS-Interface yellow cable will still form the basis of all AS-Interface installations. Therefore safety functions can be easily added to an exiting machine equipped with AS-Interface SaW.

The heart of safety
The safety monitor analyses all transmitted information from each safety device on the AS-Interface network and, in case of a safety device being activated or in case of a fault in one of the safety devices, the safety monitor immediately shuts down to create a safe condition. The safety monitor is equipped with one or two redundant pairs of enabling paths for applications up to Control Category 4 according to EN 954-1.
Each safety function of the monitor can be set with simple drag & drop software. Afterwards the parameters are downloaded into the safety monitor and protected with a password.

Safe transmission mechanism
The communication protocol for safety relevant applications is based on the unchanged AS-Interface Standard transmission. With each AS-Interface master call each safety device answers in return with a preset data telegram. This information is analysed and in case of a deviation from the pre-set values the enabling fields are opened. The maximum response time for a safe shutdown is 40 ms.

Cost reduction with AS-Interface Safety at Work
Reduce cost and installation time – A never ending story. During installation and machine commissioning as well as during maintenance, AS-Interface SaW supports the user with integrated system diagnosis. It provides detailed information about the cause and place of the failure, and enables the user to quickly find and analyse a malfunction and therefore minimise machine downtime. With AS-Interface Safety at Work you can directly reduce your cost.

More flexibility with AS-Interface Safety at Work
For the realisation of individual safety solutions, SCHMERSAL offers the maximum amount of flexibility with its diverse range of safety devices. Depending on the application the user can choose the optimal solution out of an extensive product basket. As AS-Interface SaW is an open system, the user has also the possibility to include additional Safety components from other suppliers. AS-Interface Safety at Work fulfils the safety requirements to the highest standards.

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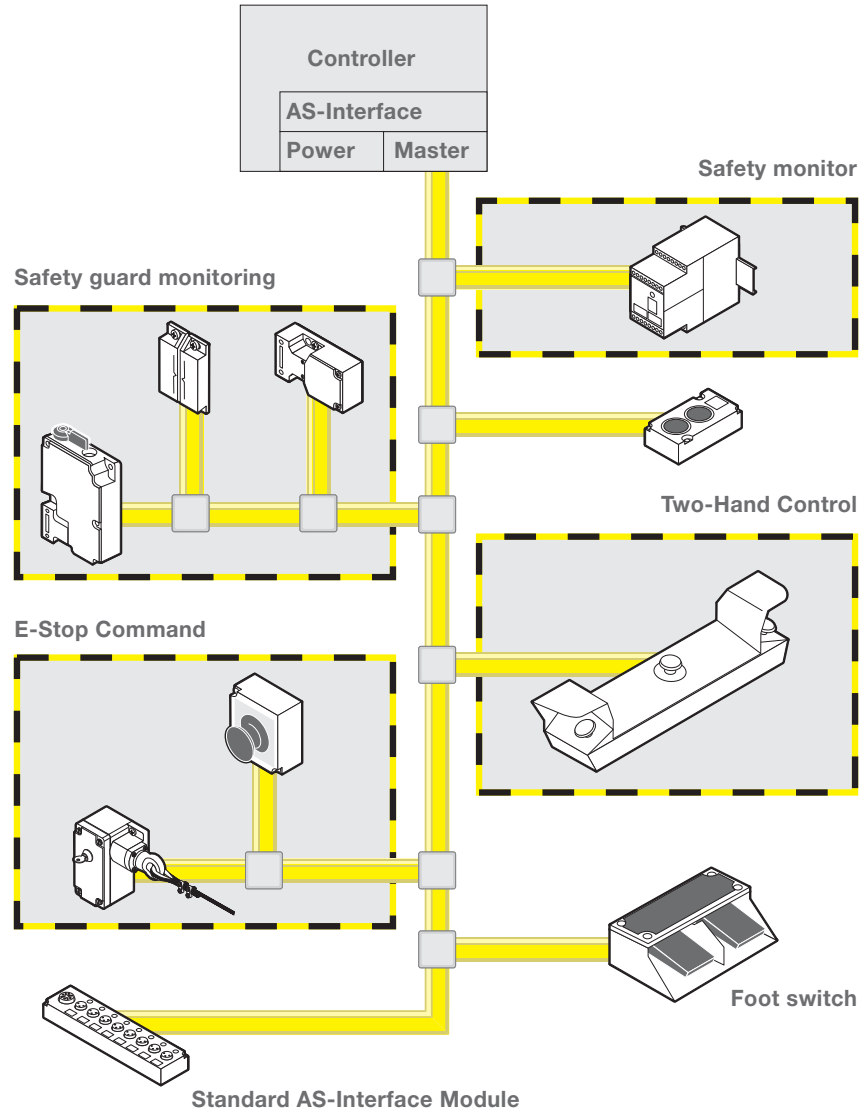
Less installation time with AS-Interface Safety at Work
Easier and quicker with AS-Interface SaW: Choose a Safety device – Connect it to the yellow AS-Interface cable – Set the safety function in the safety monitor. – That's it.

No further settings are required at each of the safety devices, the bulky parallel wire cables between the safety devices in the field and the switching cabinet are reduced and wiring time is decreased. The power supply for all safety sensors is supplied over the single yellow AS-Interface cable.

AS-Interface Safety at Work overview



AS-Interface SaW System Features
- Up to 31 standard and safety slaves on the AS-Interface system
- No Safety PLC necessary
- Safety-relevant signals can be allocated into groups and multiple Safety monitors may be connected
- Response time is max. 40 ms
- Safety-relevant signals can be integrated into plant diagnostics
- Certified up to Control Category 4 in accordance with EN 954-1
- Certified by the TÜV (German Technical Inspectorate)

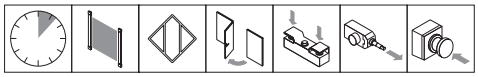
ASM

- Safety monitor
- Control Category 4 to EN 954-1
- Monitor for AS-Interface SaW compatible safety device, i.e. safety switches, solenoid interlocks, Emergency-Stop buttons, 2-Hand control, light grid and light curtains
- AS-Interface connection
- One or two redundant pairs of enabling paths
- Additional outputs (transistor, short-circuit proof)
- Configurable functions: AND logical element, OR logical element, Start devices, Start-up test
- Edge-sensitive start push button
- Feedback circuit to monitor external contactors
- LEDs to diplay switching conditions
- Operating voltage 24 VDC

Technical data

Standards:	EN 50295, EN 61496-1 (1997), IEC/EN 60204-1, EN 954-1, IEC 61508
Control category:	4
Enclosure:	Polyamide PA 66, black
Mounting:	snaps onto standard DIN rail to EN 50022
Screw terminals:	max. 2.5 mm^2 (incl. conductor ferrules)
Protection class:	terminals IP 20 enclosure IP 20
U_b:	24 VDC ± 15 %
Residual ripple:	< 15%
Ib:	ASM E1-R2: 0,15 A ASM E2-R2/R2: 0,2 A
Switch-on peak current:	600 mA
AS-Interface operating voltage:	18.5 ... 31.6 V
AS-Interface operating current:	< 45 mA
AS-Interface specification:	Profile - Monitor 7.F
Configuration interface:	RS232: 9600 baud, no parity, 1 start bit, 1 stop bit, 8 data bits
Inputs:	1.Y1,1.Y2
Input signal:	„Y1, Y2“: le < 10 mA at 24 VDC (opto coupler, high-active)
Outputs:	ASM E1-R2: 1.13/14,1.23/24, 1 enabling path (redundant); ASM E2-R2/R2: 1.13/14,1.23/24, 2.13/14, 2.23/24, 2 enabling paths (redundant)
Utilisation category:	AC-15, DC-13
I_e/U_e:	3 A / 230 VAC 1 A / 24 VDC
Switching voltage:	max. 230 VAC
I_{the}:	3 A per output circuit
Max. fuse rating:	4 A (slow blow), external
Additional outputs:	transistor outputs, 200 mA total, short-circuit proof-type, positive-switching
Switch-on time:	< 10 s
Response time:	< 40 ms
Indications:	AS-Interface: voltage LED green, communication LED red; Enabling paths: LED green, yellow, red
EMC rating:	conforming to EMC Directive
Overvoltage category:	III to DIN VDE 0110
Resistance to vibration:	5 ... 55 Hz / amplitude 0.35 mm ± 15 % at the regulation point
Resistance to shock:	10 g / 16 ms
Ambient temperature:	– 20 °C ... + 60 °C
Storage and transport temperature:	– 30 °C ... + 70 °C
Weight:	ASM E1-R2: approx. 350 g; ASM E2-R2/R2: approx. 450 g
Note:	Inductive loads (e.g. contactors, relays, etc.) are to be suppressed by means of a suitable circuit.

Approvals



Ordering details

ASM E ①

No.	Replace	Description
①	1-R2	1 enabling field (redundant)
	2-R2/R2	2 enabling fields (redundant)

Note

The safety monitors ASM E1-R2 and ASM E2-R2/R2 evaluate all transmitted information from each safety device on the AS-Interface network. For the safe guarding of different applications various AS-Interface Safety at Work compatible safety devices are needed, i.e. safety switches, solenoid interlocks, safety sensors, E-stop buttons as well as safe input modules.

The AS-Interface Safety at Work can be used in applications up to control category 4 according to EN 954-1 with the appropriate safety devices and systems.

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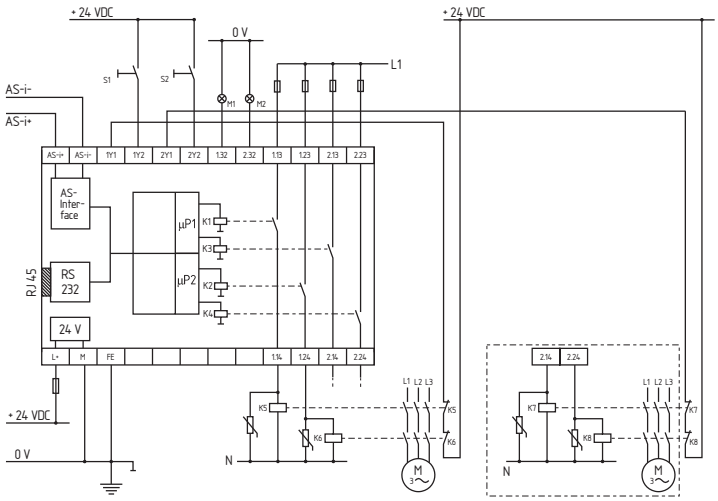
Note

- The installation of different safety areas is possible with numerous safety monitors working alongside each other. The maximum number of safety devices including the safety monitors may not exceed 31 participants.
- The allocation of the safety devices to one or more safety monitors is achieved with the help of the configuration software "asimon".
- The wiring diagram shows the safety monitor ASM E2-R2/R2 with start-pushbuttons and feedback loops.
- No safety devices are displayed, because they are installed in the field i.e. on the safety guards itself. The data connection between the safety monitor and the decentralised safety slaves is established via the AS-Interface network.
- For the operation of AS-Interface Safety at Work system, a standard controller, an AS-Interface Master and AS-Interface power supply, must always be used in the application.
- With the RJ 45 connector the safety monitor is configured and started up.

- Start push button Ⓢ
  A start push button (NO) can optionally be connected to the ASM. With the guard door(s) closed, the enabling paths are then not closed until the start push button has been operated. If neither start button nor feedback circuit are required, then no connections are required to the terminals (1Y1/2, 2Y1/2).

- Output expander module
  For additional contacts by means of more enabling paths and potential-free indication contacts an output expander module is connected to the safety monitor, i.e. to the internal ASM enabling path. For the control of the additional outputs the ASM feedback loop is utilised.

Wiring diagram



asimon

The software asimon is a tool for the configuration and commissioning of the AS-Interface safety monitors.

The configuration of the safety monitor and its safety devices, i.e. E-Stop buttons, solenoid interlocks, safety switches, 2-Hand controls, light curtains etc. is performed by an easy-to-use graphical interface. Thus providing safeguarding of hazardous areas present by power-driven machinery.

The asimon offers the user a library of icons representing different safety devices and other functional devices, i.e. one or two independent enabling paths, automatic or monitored start, stop category 0 or 1 etc. For the implementation of a new safety application the required safety devices are selected from the icon library, parameterised and assigned to the respective enabling path.

Following the successful configuration and download, the safety monitor and the safety devices can be tested and monitored with asimon.

The following functions are available with the asimon software:
- Configuration of different safety devices
- Configuration of start-modules
- Configuration logical combinations (AND, OR, RS Flip-Flops)
- Configuration of the feedback loops
- Configuration of the operating methods
- Configuration of the system-modules
- Print out of Configuration protocol

Asimon can be used offline as well as online during development and project planning. The configuration files can be saved and loaded as desired.

The software is compatibable with the Microsoft® operating system Windows 95/98/ME/NT/2000/XP.

System components

- Download cable: Interface cable with two RJ 45 connectors, Length: 0.10 m Part-number: ASM-DC1
- Configuration cable: Interface cable with one RJ 45 and SUBD 9 connector, Length: 1.2 m Part-number: ASM-KC1

Approvals

TÜV CE

Ordering details

SET ASM-SWP	**ASM-startup-package:** Configuration and diagnostic software package with online documentation on CD-ROM, a configuration- and downloadcable
ASM-CD	**asimon software package:** Configuration and diagnostic-software package with online documentation on CD-ROM

Note

Hardware requirements:
- 200 MHz INTEL Pentium® or AMD® Processor or quicker
- Min. 8 Mbyte free main memory (RAM)
- Min. 8 Mbyte free hard disk memory
- A CD-ROM drive (or 3 1/2 " disc drive) for the installation
- A mouse
- A free serial interface with 9 SubD-connection

Software requirements:
- Microsoft Windows ® 95/98/ME/NT/2000/XP

Ordering details

Download cable	**ASM-DC1**
Configuration cable	**ASM-KC1**

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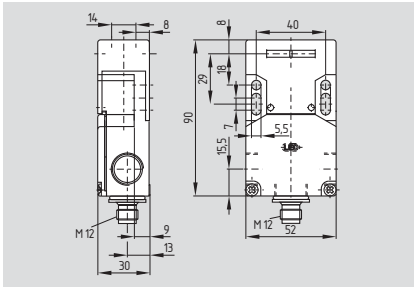
AZ 16 AS



- Safety switch with separate actuator
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector
- Address jack (optional)
- Thermoplastic enclosure
- Coded actuator
- Long life
- Protection class IP 67

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced thermoplastic, self-extinguishing
AS-Interface connection type:	connector M12 x 1
Protection class:	IP 67
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification:	Profile S-0.B IO-Code: 0x0 ID-Code: 0xB ID-Code2: 0xE

Inputs:

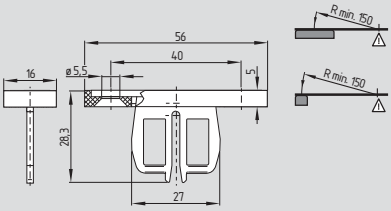
Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device

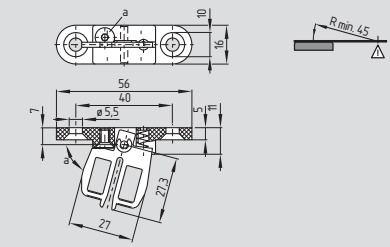
Indications:

AS-Interface:	voltage LED green, communication LED red
Enabling status:	LED yellow
Mechanical life:	> 1 million operations
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

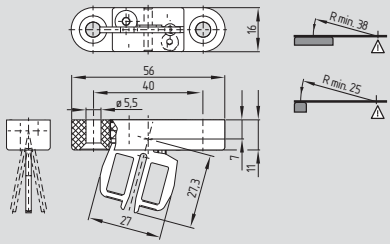
System components



Straight actuator AZ 15/16-B1



Flexible actuator AZ 15/16-B2



Flexible actuator AZ 15/16-B6

Approvals

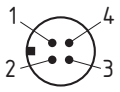
TÜV UL CSA ASI CE

Ordering details

AZ 16①-AS②③

No.	Replace	Description
①	ST1	Connector (middle)
	ST2	Connector (right)
	ST3	Connector (left)
②		No latching
	r	Latching 30 N
	r-2254	Latching 5 N
③		No address jack
	b	Address jack

Note



M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

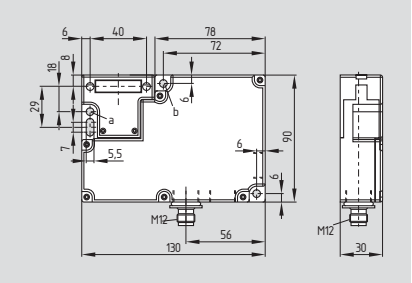
Ordering details

Straight actuator	**AZ 15/16-B1**
Flexible actuator	**AZ 15/16-B2**
Flexible actuator	**AZ 15/16-B6**

Further actuators can be found in the chapter „Safety switches with separate actuator“, see page 1-8.

Actuators must be ordered separately.

AZM 161 AS



- Solenoid interlock
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector
- Magnetic drive through AS-Interface output
- Solenoid power supply via the AS-Interface network or via an external 24 VDC power supply (p version)
- Address jack (optional)
- Thermoplastic enclosure
- Manual release, emergency exit or emergency release
- High holding force 2000 N
- 30 N latching force (optional)
- Power to unlock / power to lock principle
- Actuating play 5.5 mm in direction of actuation
- Protection class IP 67

Approvals only without address jack

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced thermoplastic, self-extinguishing
AS-Interface connection type:	connector M12 x 1
Protection class:	IP 67
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	Total: ≤ 500 mA AS electronics: ≤ 50 mA
AS-Interface specification:	Profile S-7.B IO-Code 0x7 ID-Code 0xB ID-Code2 0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Outputs:	A0 Solenoid control A1 … A3 not used
Parameter bits:	P0 Actuator / interlock status P1 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	
AS-Interface:	voltage LED green, communication LED red
Enabling status:	LED yellow
Mechanical life:	> 1 million operations
F_{max}:	2000 N
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

Note

The AZM 161 Z version must be selected for applications where safety guard locking is required. The AZM 161 B version has a safety-monitored actuator with supplementary guard locking function.

Depending on the device version, the safety inputs (D0-D3) are connected internally to the solenoid (Z) or actuator contacts (B). The safety monitor (ASM) monitors the coded data transmission.

Output A0 is used to lock or unlock the solenoid of the solenoid interlock. Parameter bit P0 gives the control system feedback about the status of the actuator or solenoid interlock.

Parameter bit:
The status of the actuator or the locking bolt can be monitored by the parameter bit P0 depending on the device:

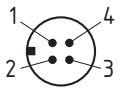
Device	Parameter bit P0	Safety guard status
AZM 161 B	0	Guard locked
AZM 161 B	1	Guard unlocked
AZM 161 Z	0	Guard closed
AZM 161 Z	1	Guard open

Ordering details

AZM 161①②-AS③④⑤⑥⑦

No.	Replace	Description
①	B	Actuator monitored
	Z	Guard locking monitored
②	ST1	Connector (middle)
	ST2	Connector (right)
③		No latching
	r	Latching 30 N
④		Power to unlock
	a	Power to lock
⑤		No address jack
	b	Address jack
⑥		Integrated solenoid supply
	p	External solenoid supply
⑦		Manual release
	N	Emergency release
	T	Emergency exit

Note



M12 connector:
1: AS-Interface +
2: Aux – (p)
3: AS-Interface –
4: Aux + (p)

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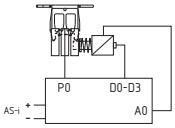
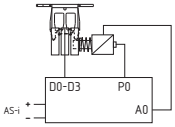
Contact variants

Integrated power supply

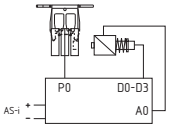
Power to unlock
Guard locking monitored



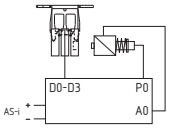
Actuator monitored



Power to lock
Guard locking monitored



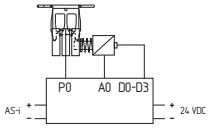
Actuator monitored



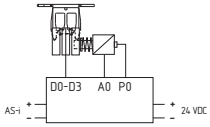
Contact variants

External power supply

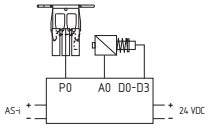
Power to unlock
Guard locking monitored



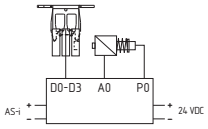
Actuator monitored



Power to lock
Guard locking monitored



Actuator monitored



Note

Integrated power supply:
The solenoid interlock AZM 161 AS is powered by the AS-Interface. Connection to the AS-Interface is made via the M12 connector.

The required supply voltage for the solenoid is also supplied by the AS network.

The maximum number of interlocks with integrated power supply and power to lock principle (a) depends solely on the employed AS-Interface power supply and its electric current output.

To lock or unlock the guard door, the network must supply a maximum current of 0.5 A per solenoid interlock.

External power supply:
The solenoid interlock AZM 161 AS ...p is monitored by the AS-Interface. The locking solenoid is powered by an external power supply. Connection to the AS-Interface and the auxiliary power is made via a single M12 connector.

The necessary solenoid supply voltage is provided externally (auxiliary power).

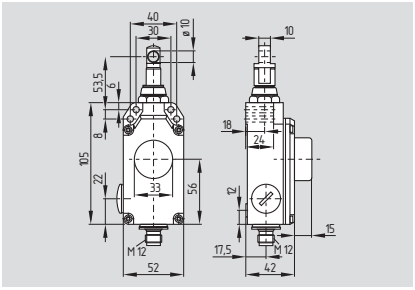
Up to 29 solenoid interlocks with an external power supply can be operated on one AS-Interface network depending on the application.

Solenoid control:
An internal output controls the solenoid operation. Depending on the device version, the output bit A0 locks or releases the actuator. The output bit A0 has the same address as the safety inputs.

Legend

D0 – D3	Coded data for the evaluation of the safety monitor (4 Bit)
P0	Status signal (1 Bit)
A0	Output for switching the solenoid (1 Bit)

ZS 71 AS



- Pull-wire Emergency-Stop switch
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector
- Metal enclosure
- Various spring force variants (actuating forces)
- Adjustable actuating force
- Wire up to 20 m long
- Reset by push button or key possible
- Protection class IP 65 (with push button and external watertight collar)

Approvals

TÜV UL CSA AS-Interface CE

Technical data

Standards:	EN 50295, EN 60947-5-1, EN 954-1
Enclosure:	cast aluminium, enamelled
Cover:	thermoplastic ultramid
AS-Interface connection type:	connector M12 x 1
Protection class:	IP 54 IP 65 for version with push button reset and watertight collar
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA, with indicator lamp ≤ 130 mA
AS-Interface specification:	Profile S-0.B (with indicator lamp) S-7.B IO-Code 0x0 (with indicator lamp) 0x7 ID-Code 0xB ID-Code2 0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Outputs:	A0 Indicator lamp (optional) A1 … A3 not used
Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Mechanical life:	> 1 million operations
Maximum cable length:	20 m
Features:	wire pull and breakage detection
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

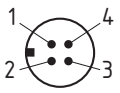
Ordering details

ZS 71①-AS ②③-④-⑤ / ⑥

No.	Replace	Description
①	ST1	Connector
②		Without watertight collar
	W	With watertight collar
③		Without safety function
	VD	Push button reset
	VS	Key reset
④		Without position indicator
	A	With position indicator
⑤		Without indicator lamp
	G	With indicator lamp
⑥	55 N	Pre-tensioning force: For wire length 0 - 5 m
	200 N	For wire length 5 - 20 m

Note

A separate address jack is not available as an option. The addressing must take place via the cable end or the M12 connector.



M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

A wide range of accessories is available.
For selection, see page 2-9.

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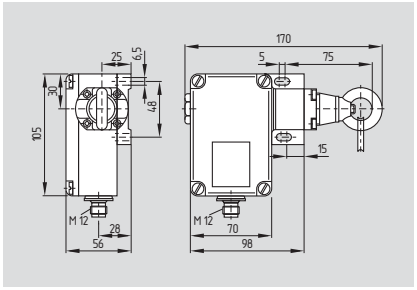
ZS 73 AS



- Pull-wire Emergency-Stop switch
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector
- Metal enclosure
- 4 various spring force variants (actuating forces)
- Adjustable actuating force
- Wire up to 50 m long
- Reset by push button or key possible
- Protection class IP 65 (with push button and external watertight collar)

Approvals

TÜV UL CSA ASI CE

Technical data

Standards:	EN 50295, EN 60947-5-1, EN 954-1
Enclosure:	cast aluminium, enamelled
Cover:	thermoplastic ultramid
AS-Interface connection type:	connector M12 x 1
Protection class:	IP 54 IP 65 for version with push button reset and watertight collar
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA, with indicator lamp ≤ 130 mA
AS-Interface specification:	Profile S-0.B (with indicator lamp) S-7.B IO-Code 0x0 (with indicator lamp) 0x7 ID-Code 0xB ID-Code2 0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Outputs:	A0 Indicator lamp (optional) A1 … A3 not used
Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Mechanical life:	> 1 million operations
Maximum cable length:	50 m
Features:	wire pull and breakage detection
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

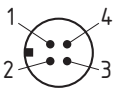
Ordering details

ZS 73①-AS ②③-④ / ⑤

No.	Replace	Description
①	ST1	Connector
②		Without watertight collar
	W	With watertight collar
③		Without safety function
	VD	Push button reset
	VS	Key reset
④		Without indicator lamp
	G	With indicator lamp
⑤	80-100N	Pre-tensioning force: For wire length 0-10 m
	120-180N	For wire length 10-20 m
	195-275N	For wire length 20-30 m
	295-390N	For wire length 30-50 m

Note

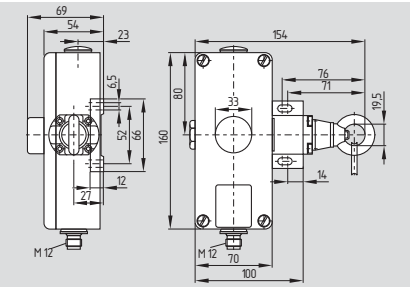
A separate address jack is not available as an option. The addressing must take place via the cable end or the M12 connector.



M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

A wide range of accessories is available.
For selection, see page 2-9.

ZS 75 AS



- Pull-wire Emergency-Stop switch
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector
- Metal enclosure
- 4 various spring force variants (actuating forces)
- Adjustable actuating force
- Wire up to 50 m long
- Reset by push button or key possible
- Protection class IP 65 (with push button and external watertight collar)

Approvals

TÜV UL CSA AS-Interface CE

Technical data

Standards:	EN 50295, EN 60947-5-1, EN 954-1
Enclosure:	cast aluminium, enamelled
Cover:	cast aluminium, enamel finish
AS-Interface connection type:	connector M12 x 1
Protection class:	IP 54 IP 65 for version with push button reset and watertight collar
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA, with indicator lamp ≤ 130 mA
AS-Interface specification:	Profile S-0.B (with indicator lamp) S-7.B IO-Code 0x0 (with indicator lamp) 0x7 ID-Code 0xB ID-Code2 0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Outputs:	A0 Indicator lamp (optional) A1 … A3 not used
Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Mechanical life:	> 1 million operations
Maximum cable length:	50 m
Features:	wire pull and breakage detection
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

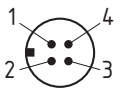
Ordering details

ZS 75①-AS ②③-④ / ⑤

No.	Replace	Description
①	ST1	Connector
②		Without watertight collar
	W	With watertight collar
③		Without safety function
	VD	Push button reset
	VS	Key reset
④		Without indicator lamp
	G	With indicator lamp
⑤	80-100N	Pre-tensioning force: For wire length 0-10 m
	120-180N	For wire length 10-20 m
	195-275N	For wire length 20-30 m
	295-390N	For wire length 30-50 m

Note

A separate address jack is not available as an option. The addressing must take place via the cable end or the M12 connector.



M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

A wide range of accessories is available.
For selection, see page 2-9.

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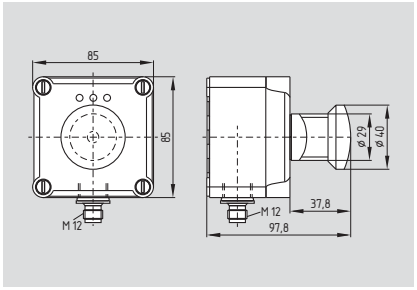
NAS 311 AS



- E-STOP station
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector
- Pull to reset
- Resistant to chemicals
- Protection class IP 65

Technical data

Standards:	EN 50295, EN 60947-5-1, EN 954-1
Enclosure:	glass-fibre reinforced polyamide nylon, self-extinguishing
Emergency-Stop button:	thermoplastic or aluminium
AS-Interface connection type:	connector M12 x 1
Protection class:	IP 65
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification:	Profile S-0.B IO-Code: 0x0 ID-Code: 0xB ID-Code2: 0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

Approvals

TÜV UL SP ASI CE

Ordering details

NAS 311 ①-AS ②

No.	Replace	Description
①	ST1	Connector Thermoplastic enclosure
②	M	Metal housing
	MH	Metal housing and push button with protection collar

Note

A separate address jack is not available as an option. The addressing must take place via the cable end or the M12 connector.

M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

AST ... AS

- Input module
- 2 safe inputs for mechanical contacts
- Cross-wire monitoring
- Magnetic drive through AS-Interface output
- Solenoid power supply via via an external 24 VDC power supply
- AS-Interface LED status display
- AS-Interface M12 connector
- Thermoplastic enclosure
- Long life
- Protection class IP 67
- Connection of NC/NC contact or NC/NO contact combination

Technical data

Standards:			EN 50295, EN 60947-5-1, EN 954-1
Enclosure:			glass-fibre reinforced thermoplastic, self-extinguishing
AS-Interface connection type:			(see ordering data)
Protection class:			IP 67
AS-Interface operating voltage:			26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:			≤ 50 mA
AS-Interface specification:		Profile	S-7.B
		IO-Code	0x7
		ID-Code	0xB
		ID-Code2	0xE
Inputs:	Contact	Status	Data bits
	1	on	D0/D1 = dynamic code transmission
	1	off	D0/D1 = static code “00”
	2	on	D2/D3 = dynamic code transmission
	2	off	D2/D3 = static code “00”
Outputs:			A0 Solenoid control A1... A3 not used
Parameter bits:			P0 ... P3 not used
Input module address:			default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface:		supply voltage green LED, communication red LED, blinking = cross-wire short
	Enabling status:		LED1/contact1, yellow/contact2
EMC rating:			conforming to EMC Directive
Ambient temperature:			– 25 °C ... + 55 °C
Storage and transport temperature:			– 25 °C ... + 85 °C

Approvals

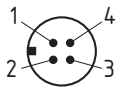
TÜV UL CSA AS-Interface CE

Ordering details

AST ①②-AS③④

No.	Replace	Description
①	02	1 NC/1 NC
	11	1 NO/1 NC
②	ST	M12 connector
	L	Cable (2m)
③	2	2 x 2-single conductors (2 safety inputs)
	4	1 x 4-single conductors (2 safety inputs)
	6	1 x 6-single conductors (2 safety inputs and 1 semiconductor output)
④	ST	M12 connector with 2m cable (2 x 2 or 1 x 4)

Note



M12 connector:
1: AS-Interface +
2: Aux – (6) (AST...6)
3: AS-Interface –
4: Aux + (6) (AST...6)

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Note

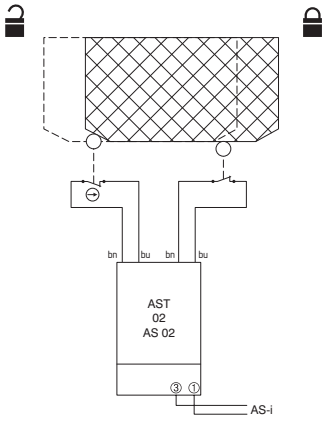
- The wiring diagram is shown with guard doors closed and in de-energised condition.

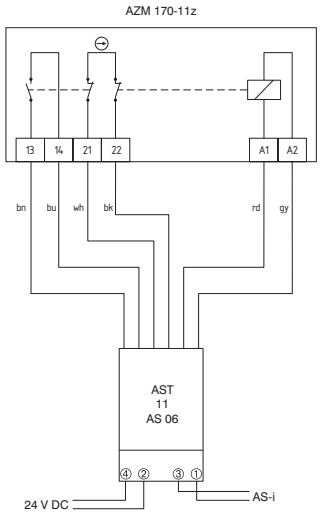
- Monitoring a sliding guard door using two position switches with safety function. The NC contact must have positive break when the guard door is opened.

- The module AST...AS is monitored by the AS-Interface. The locking solenoid is powered by an external power supply. Connection to the AS-Interface and the auxiliary power is made via a single M12 connector or via a 4-pole connecting cable.
- The necessary solenoid supply voltage is provided externally (auxiliary power).

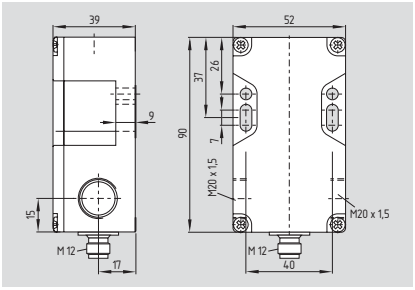
- An internal output controls the solenoid operation. Depending on the interlocking device, output bit A0 locks or unlocks the actuator. Output bit A0 has the same address as the safety inputs.

Wiring diagram





BNS 16 AS



- Safety sensor
- Integrated AS-Interface
- AS-Interface LED status display
- Available with M12 plug-in connetor and pre-wired cable
- Thermoplastic enclosure
- Coded actuator
- Long life, no mechanical wear
- Intensitive to transverse misalignment
- Concealed mounting possible
- Intensitive to soiling
- Protection class IP 67

Technical data

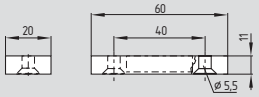
Standards:		EN 50295 EN 60947-5-1 EN 954-1
Enclosure:		glass-fibre reinforced thermoplastic, self-extinguishing
AS-Interface connection type:		connector M12 x 1
Protection class:		IP 67
AS-Interface operating voltage:		26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:		≤ 100 mA
AS-Interface specification:	Profile:	S-0.B
	IO-Code:	0x0
	ID-Code:	0xB
	ID-Code2:	0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Parameter bits:	P0 … P3 not used
Input module address:	Default on address 0
Indications:	
AS-Interface:	voltage LED green, communication LED red
Enabling status:	LED yellow
Mode of operation:	magnetic
Sao:	8 mm
Sar:	18 mm
Repeat accuracy R:	≤ 0,1 x Sao
Switching frequency f:	< 1 Hz
Actuating magnet:	BPS 16, coded
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

System components



Actuating magnet BPS 16

Actuating planes

Approvals

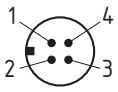
TÜV UL CSA cULus CE

Ordering details

BNS 16①-AS②

No.	Replace	Description
①	ST1	Connector (middle)
	ST2	Connector (right)
	ST3	Connector (left)
②		Actuating planes:
	V	front side
	D	cover-side

Note



M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Ordering details

Actuating magnet	**BPS 16**

Actuators must be ordered separately.

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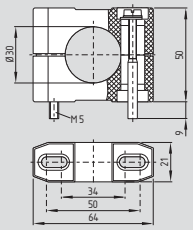
System components

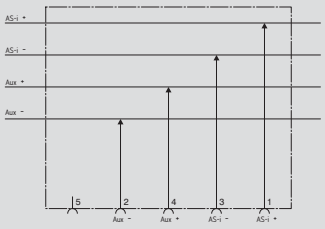
IDC connector (M12 outlet)

IDC connector (screw outlet)



Terminal mounting H 30

System components



Passive connection module (M12 outlet)

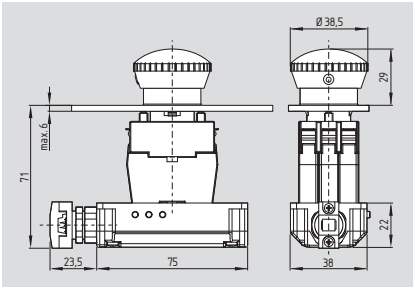
Ordering details

IDC connector (M12 outlet)
IDC connector (screw outlet)
Terminal mounting H 30

Ordering details

Passive connection module (M12 outlet)

ASU command devices



- Emergency-Stop button
- Compact embeddable command devices with ASU adapter box
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector, IDC connector
- Miscellanous positioning parts (metal, plastic)
- Mounting hole 22.3 mm (to EN 50 007)
- Protection class IP 65 (from front)

Approvals

TÜV CE

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced polyamide nylon, self-extinguishing
AS-Interface connection type:	(see ordering data)
Protection class:	IP 65 (front) IP 20 (rear of the front plate)
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification:	Profile S-7.B IO-Code 0x7 ID-Code 0xB ID-Code2 0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Resistance to shock:	110 g/4 ms…30 g/18 ms, no bouncing (for actuating heads with higher respectively lower weight)
Resistance to vibration:	≥ 20 g / 10 …200 Hz (for actuating heads with higher respectively lower weight)
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

Technical data

Actuating elements

Al-metal actuating element:

Resistance to shock:	max. 15 g / 22 ms* (temporary data)
Resistance to vibration:	max. 0.35 mm, 0 … 150 Hz

Plastic actuating element:

Resistance to shock:	max. 15 g / 22 ms* (temporary data)
Resistance to vibration:	max. 0.35 mm, 0 … 150 Hz

* preliminary data

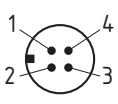
Ordering details

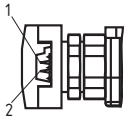
EFP①-AS② Contact block
③DRZ 40 RT Actuating element

No.	Replace	Description
①	ST	M12 connector
	DT	Flat cable connection (DC)
	ME	optional: 2 m cable, cable gland, flying lead
②	30	1 NC
	330	2 NC
③	E	Metal actuating element
	K	Plastic actuating element

Note

Addressing through flat cable connection or through M12 connector.





M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Flat cable connection:
1: AS-i +
2: AS-i –

Note

Mounting
One-hole fixation 22.3 mm + 0.4 mm to EN 50 007 (a tail cut-out as displacement protection is not required for Elan devices)

The positioning parts are not included in delivery.

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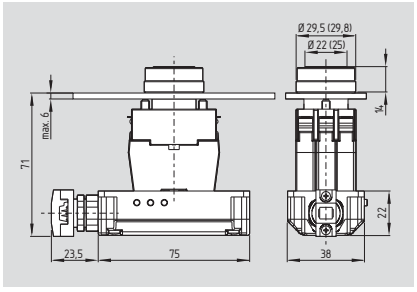
ASU command devices



- Push button
- Compact embeddable command devices with ASU adapter box
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector, IDC connector
- Miscellanous positioning parts (metal, plastic)
- Mounting hole 22.3 mm (to EN 50 007)
- Protection class IP 65 (from front)

Approvals

TÜV CE

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced polyamide nylon, self-extinguishing
AS-Interface connection type:	(see ordering data)
Protection class:	IP 65 (front) IP 20 (rear of the front plate)
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification:	Profile S-7.B IO-Code 0x7 ID-Code 0xB ID-Code2 0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Resistance to shock:	110 g/4 ms…30 g/18 ms, no bouncing (for actuating heads with higher respectively lower weight)
Resistance to vibration:	≥ 20 g / 10 …200 Hz (for actuating heads with higher respectively lower weight)
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

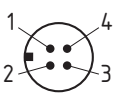
Ordering details

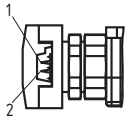
EFP①-AS② Contact block
③ DT ④ Actuating element

No.	Replace	Description
①	ST	M12 connector
	DT	Flat cable connection (DC)
	ME	optional: 2 m cable, cable gland, flying lead
②	03	1 NO
	033	2 NO
③	E	Metal actuating element
	K	Plastic actuating element
④	GN*	Green push-button
	SW*	Black push-button
	BL*	Blue push-button
		Other colours on request

Note

Addressing through flat cable connection or through M12 connector.





M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Flat cable connection:
1: AS-i +
2: AS-i –

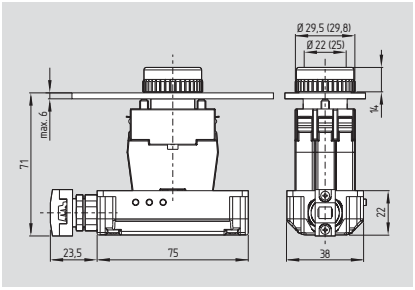
Note

Mounting
One-hole fixation 22.3 mm + 0.4 mm to EN 50 007 (a tail cut-out as displacement protection is not required for Elan devices)

The positioning parts are not included in delivery.

* Push-buttons in different colours available on request.

ASU command devices



- Illuminated push-button
- Compact embeddable command devices with ASU adapter box
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector, IDC connector
- Miscellanous positioning parts (metal, plastic)
- Mounting hole 22.3 mm (to EN 50 007)
- Protection class IP 65 (from front)

Approvals

TÜV CE

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced polyamide nylon, self-extinguishing
AS-Interface connection type:	(see ordering data)
Protection class:	IP 65 (front) IP 20 (rear of the front plate)
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA, with illuminated pushbutton ≤ 70 mA
AS-Interface specification :	Profile S-7.B IO-Code 0x7 ID-Code 0xB ID-Code2 0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Outputs:	A0 Indicator lamp A1 ... A3 not used
Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Resistance to shock:	110 g/4 ms…30 g/18 ms, no bouncing (for actuating heads with higher respectively lower weight)
Resistance to vibration:	≥ 20 g / 10 …200 Hz (for actuating heads with higher respectively lower weight)
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temp.:	– 25 °C … + 85 °C

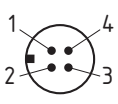
Ordering details

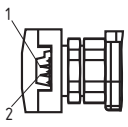
EFP①-AS② Contact block
③DL④ Actuating element

No.	Replace	Description
①	ST	M12 connector
	DT	Flat cable connection (DC)
	ME	optional: 2 m cable, cable gland, flying lead
②	03L	1 NO
③	E	Metal actuating element
	K	Plastic actuating element
④	GN*	Green illuminated push-button
	SW*	Black illuminated push-button
		Other colours on request

Note

Addressing through flat cable connection or through M12 connector.





M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Flat cable connection:
1: AS-i +
2: AS-i –

Note

Mounting
One-hole fixation 22.3 mm + 0.4 mm to EN 50 007 (a tail cut-out as displacement protection is not required for Elan devices)

The positioning parts are not included in delivery.

* Push-buttons in different colours available on request.

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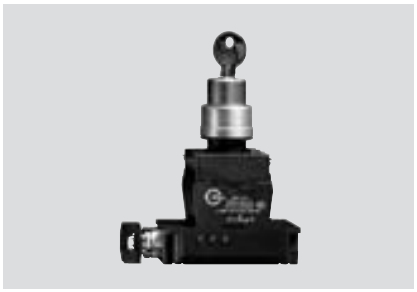
ASU command devices



• Other ASU command devices on request

Approvals

TÜV

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced polyamide nylon, self-extinguishing
AS-Interface connection type:	(see ordering data)
Protection class:	IP 65 (front) IP 20 (rear of the front plate)
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification :	Profile S-7.B IO-Code 0x7 ID-Code 0xB ID-Code2 0xE

Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

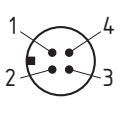
Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Switching frequency:	3600/h
Resistance to shock:	30 g/18 ms, no bouncing (for actuating heads with higher respectively lower weight)
Resistance to vibration:	≥ 15 g / 10 ... 200 Hz (for actuating heads with higher respectively lower weight)
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temp.:	– 25 °C … + 85 °C

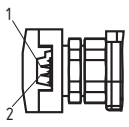
Ordering details

on request

Note

Addressing through flat cable connection or through M12 connector.

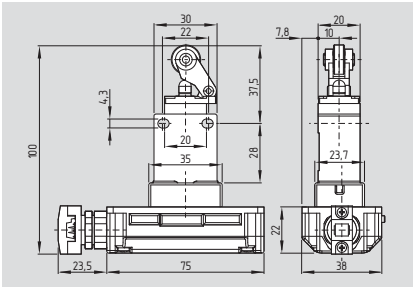




M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Flat cable connection:
1: AS-i +
2: AS-i –

ASU position switches



- Position switch with offset roller lever
- Compact position switches with ASU-adapter box
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector, IDC connector
- Mounting details to EN 50 047
- Positive break contacts
- Protection class IP 65 (from front)

Approvals

TÜV

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced polyamide nylon, self-extinguishing
Design:	fixings to EN 50047
AS-Interface connection type:	(see ordering data)
Protection class:	IP 65 (front) IP 20 (rear of the front plate)
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification :	Profile S-7.B IO-Code 0x7 ID-Code 0xB ID-Code2 0xE

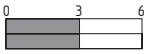
Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Switching frequency:	3600/h
Resistance to shock:	30 g/18 ms, no bouncing (for actuating heads with higher respectively lower weight)
Resistance to vibration:	≥ 15 g / 10 ... 200 Hz (for actuating heads with higher respectively lower weight)
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

Contact variants

Switching angle



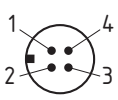
Ordering details

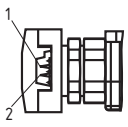
SESR ① ②-AS③

No.	Replace	Description
①	11	Metal roller
	13	Plastic roller
②	ST	M12 connector
	DT	Flat cable connection (DC)
	ME	optional: 2 m cable, cable gland, flying lead
③	110	2 NC

Note

Addressing through flat cable connection or through M12 connector.





M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Flat cable connection:
1: AS-i +
2: AS-i –

Note

General use

Actuating angle:	max. 30°
Actuating direction of the actuating heads:	4 x 90° repositioned

Repeat accuracy of switching points

for plastic rollers:	± 0,2 mm
for metal rollers:	± 0,1 mm
at the plunger:	± 0,01 mm

Plastic roller

Actuating speed (normally):	> 30m/min.

Metal roller

Actuating speed (temperatures > 50°C):	max. 30 m/min

Mounting:

Recommended:	cylindric screws M4 x 25 ISC 1207 (DIN 84), spring washer A4 DIN 137

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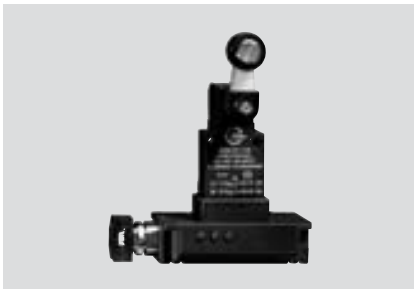
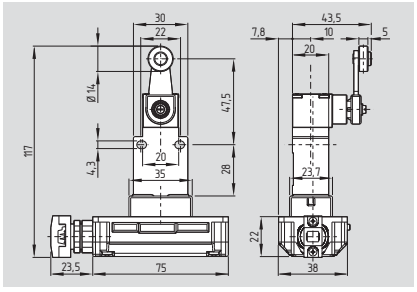
ASU position switches





- Position switches with vertical roller lever
- Compact position switches with ASU-adapter box
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector, IDC connector
- Mounting details to EN 50 047
- Positive break contacts
- Protection class IP 65 (from front)

Approvals

TÜV

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced polyamide nylon, self-extinguishing
Design:	fixings to EN 50047
AS-Interface connection type:	connector M12 x 1
Protection class:	IP 65 (front) IP 20 (rear of the front plate)
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification :	Profile S-7.B IO-Code 0x7 ID-Code 0xB ID-Code2 0xE

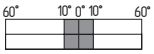
Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Switching frequency:	3600/h
Resistance to shock:	30 g/18 ms, no bouncing (for actuating heads with higher respectively lower weight)
Resistance to vibration:	≥ 15 g / 10 ... 200 Hz (for actuating heads with higher respectively lower weight)
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C ... + 60 °C
Storage and transport temperature:	– 25 °C ... + 85 °C

Contact variants

Switching angle



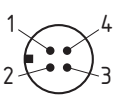
Ordering details

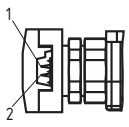
SESH ① ②-AS③

No.	Replace	Description
①	15	Metal roller
	17	Plastic roller
②	ST	M12 connector
	DT	Flat cable connection (DC)
	ME	optional: 2 m cable, cable gland, flying lead
③	110	2 NC

Note

Addressing through flat cable connection or through M12 connector.





M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Flat cable connection:
1: AS-i +
2: AS-i –

Note

General use

Actuating angle:	max. 30°
Actuating direction of the actuating heads:	4 x 90° repositioned

Repeat accuracy of switching points

for plastic rollers:	± 0,2 mm
for metal rollers:	± 0,1 mm
at the plunger:	± 0,01 mm

Plastic roller

Actuating speed (normally):	> 30m/min.

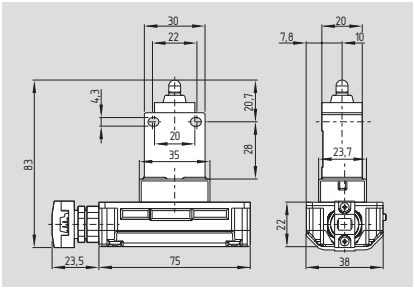
Metal roller

Actuating speed (temperatures > 50°C):	max. 30 m/min

Mounting:

Recommended:	cylindric screws M4 x 25 ISC 1207 (DIN 84), spring washer A4 DIN 137

ASU position switches



- Position switches with vertical plunger
- Compact position switches with ASU-adapter box
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector, IDC connector
- Mounting details to EN 50 047
- Positive break contacts
- Protection class IP 65 (from front)

Approvals

TÜV CE

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced polyamide nylon, self-extinguishing
Design:	fixings to EN 50047
AS-Interface connection type:	connector M12 x 1
Protection class:	IP 65 (front) IP 20 (rear of the front plate)
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification :	Profile S-7.B IO-Code 0x7 ID-Code 0xB ID-Code2 0xE

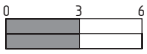
Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Switching frequency:	3600/h
Resistance to shock:	30 g/18 ms, no bouncing (for actuating heads with higher respectively lower weight)
Resistance to vibration:	≥ 15 g / 10 ... 200 Hz (for actuating heads with higher respectively lower weight)
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

Contact variants

Switching angle



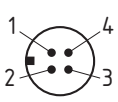
Ordering details

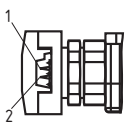
SES ① -AS②

No.	Replace	Description
①	ST	M12 connector
	DT	Flat cable connection (DC)
	ME	optional: 2 m cable, cable gland, flying lead
②	110	2 NC

Note

Addressing through flat cable connection or through M12 connector.





M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Flat cable connection:
1: AS-i +
2: AS-i –

Note

General use

Actuating angle:	max. 30°
Actuating direction of the actuating heads:	4 x 90° repositioned

Repeat accuracy of switching points

for plastic rollers:	± 0,2 mm
for metal rollers:	± 0,1 mm
at the plunger:	± 0,01 mm

Plastic roller

Actuating speed (normally):	> 30m/min.

Metal roller

Actuating speed (temperatures > 50°C):	max. 30 m/min

Mounting:

Recommended:	cylindric screws M4 x 25 ISC 1207 (DIN 84), spring washer A4 DIN 137

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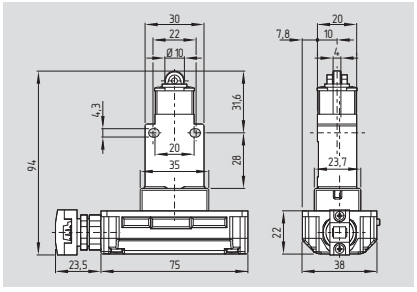
ASU position switches



- Position switches with vertical roller plunger
- Compact position switches with ASU-adapter box
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector, IDC connector
- Mounting details to EN 50 047
- Positive break contacts
- Protection class IP 65 (from front)

Approvals

TÜV

Technical data

Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced polyamide nylon, self-extinguishing
Design:	fixings to EN 50047
AS-Interface connection type:	connector M12 x 1
Protection class:	IP 65 (front) IP 20 (rear of the front plate)
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification :	Profile S-7.B IO-Code 0x7 ID-Code 0xB ID-Code2 0xE

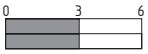
Inputs:

Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Switching frequency:	3600/h
Resistance to shock:	30 g/18 ms, no bouncing (for actuating heads with higher respectively lower weight)
Resistance to vibration:	≥ 15 g / 10 ... 200 Hz (for actuating heads with higher respectively lower weight)
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C

Contact variants

Switching angle



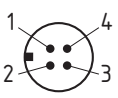
Ordering details

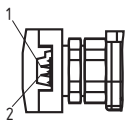
SESB ① ②-AS③

No.	Replace	Description
①	31	Metal roller
	33	Plastic roller
②	ST	M12 connector
	DT	Flat cable connection (DC)
	ME	optional: 2 m cable, cable gland, flying lead
③	110	2 NC

Note

Addressing through flat cable connection or through M12 connector.





M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Flat cable connection:
1: AS-i +
2: AS-i –

Note

General use

Actuating angle:	max. 30°
Actuating direction of the actuating heads:	4 x 90° repositioned

Repeat accuracy of switching points

for plastic rollers:	± 0,2 mm
for metal rollers:	± 0,1 mm
at the plunger:	± 0,01 mm

Plastic roller

Actuating speed (normally):	> 30m/min.

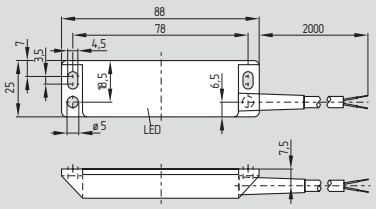
Metal roller

Actuating speed (temperatures > 50°C):	max. 30 m/min

Mounting:

Recommended:	cylindric screws M4 x 25 ISC 1207 (DIN 84), spring washer A4 DIN 137

BNS 33 AS



- Safety sensor
- Integrated AS-Interface
- AS-Interface LED status display
- Available with M12 plug-in connetor and pre-wired cable
- Thermoplastic enclosure
- Coded actuator
- Long life, no mechanical wear
- Intensitive to transverse misalignment
- Concealed mounting possible
- Intensitive to soiling
- Protection class IP 67

Technical data

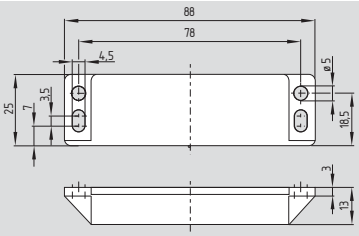
Standards:	EN 50295 EN 60947-5-1 EN 954-1
Enclosure:	glass-fibre reinforced thermoplastic
AS-Interface connection type:	cable LSYY (black)
Cable section:	2 x 0.24 mm²
Protection class:	IP 67
AS-Interface operating voltage:	26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:	≤ 50 mA
AS-Interface specification:	Profile: S-0.B IO-Code: 0x0 ID-Code: 0xB ID-Code2: 0xE

Inputs:

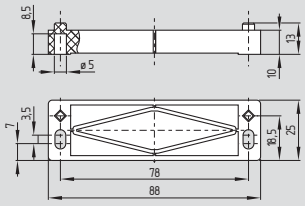
Contact	Status	Data bits
1	on	D0/D1 = dynamic code transmission
1	off	D0/D1 = static code “00”
2	on	D2/D3 = dynamic code transmission
2	off	D2/D3 = static code “00”

Parameter bits:	P0 … P3 not used
Input module address:	default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:	AS-Interface: voltage LED green, communication LED red Enabling status: LED yellow
Mode of operation:	magnetic
S_{ao}:	5 mm
S_{ar}:	15 mm
Actuating magnet:	BPS 33, coded
EMC rating:	conforming to EMC Directive
Ambient temperature:	– 25 °C … + 70 °C
Storage and transport temperature:	– 25 °C … + 85 °C

System components



Actuating magnet BPS 33



Spacer BN 31/33

Approvals

TÜV UL CSA ASI CE

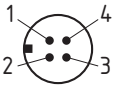
Ordering details

BNS 33①-AS

No.	Replace	Description
①		2 m cable
	STG	2 m cable with straight plug M12
	STW	2 m cable with angled plug M12

Note

A separate address jack is not available as an option. The addressing must take place via the cable end or the M12 connector.



M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

Ordering details

Actuating magnet	**BPS 33**
Spacer	**BN 31/33**

The actuators for the magnetic safety sensors must be ordered separately.

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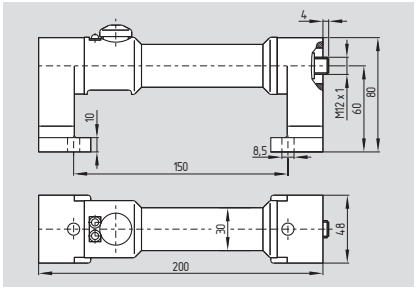
TG...-A



- Door handle switch
- Integrated AS-Interface
- AS-Interface LED status display
- AS-Interface M12 connector
- Enabling button
- Coloured signal LEDs (optional)
- Protection class IP 65

Technical data

Standards:		EN 50295 EN 60947-5-1 EN 954-1
Enclosure:		PA + POM
AS-Interface connection type:		connector M12 x 1
Protection class:		IP 65
AS-Interface operating voltage:		26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
AS-Interface operating current:		≤ 50 mA
AS-Interface specification :	Profile	S-B.A
	IO-Code	0xB
	ID-Code	0xA
	ID-Code2	0xE
Outputs:	Data bits	Function
	D0	LED 1 (G)
	D1	LED 2 (R)
Inputs:	Data bits	Function
	D2	NO contact 1
	D3	NO contact 2 (optional)
Input module address:		default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:		AS-Interface: voltage LED green communication LED red
EMC rating:		conforming to EMC Directive
Ambient temperature:		– 20 °C ... + 60 °C
Storage and transport temperature:		– 25 °C ... + 85 °C

Approvals

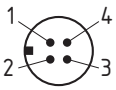
Ordering details

TG-S GR xx-A

Further devices on request.

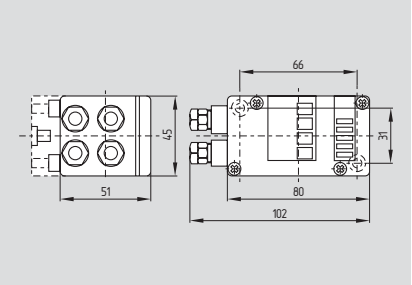
Note

A separate address jack is not available as an option. The addressing must take place via the cable end or the M12 connector.



M12 connector:
1: AS-Interface +
2: spare
3: AS-Interface –
4: spare

ASF 2 CC



- Input module
- 2 safe inputs for mechanical contacts
- Cross-wire monitoring
- Cage clamp terminals for safety device connection
- LED function display
- IDC technology for AS-Interface flat cable
- Protection class IP 67

Technical data

Standards:			EN 50295, EN 954-1
Enclosure:			black
AS-Interface connection type:			IDC to the flat cable AS-Interface
Cage clamp terminals:			max. 2,5 mm^2 (incl. conductor ferrules)
AS-Interface operating voltage:			26.5 ... 31.6 VDC, via AS-Interface, reverse-polarity proof
Protection class:			IP 67
AS-Interface operating current:			< 70 mA
Inputs:			2 safe inputs for mechanical contacts, monitored for cross-wired circuit, cable length < 30 m
Input signal:			„S+1, S+2“: Ie < 10 mA, pulsed
AS-Interface specification:		Profile:	S-0.B
		IO-Code:	0x0
		ID-Code:	0xB
		ID-Code2:	0xE
Inputs:	Switch	Status	Data bits
	1	on	D0/D1 = dynamic code transmission
	1	off	D0/D1 = static code “00”
	2	on	D2/D3 = dynamic code transmission
	2	off	D2/D3 = static code “00”
Parameter bits:		P0	not used
		P1	not used
		P2	not used
		P3	not used
Input module address:			default on address 0, programmable via the AS-Interface Master or Hand-held programming device
Indications:		AS-Interface:	voltage LED green, communication LED red
		Switching condition:	LED yellow
EMC rating:			conforming to EMC Directive
Ambient temperature:			– 25 °C ... + 60 °C
Storage and transport temperature:			– 25 °C ... + 85 °C

Approvals

TÜV

Ordering details

ASF 2 CC

Note

The safe AS-Interface input module offers two universal safety relevant inputs for mechanical contacts. The safe switches are connected to cage-clamp terminals inside the module housing. The signal voltage is supplied by the module itself.

The two safe input channels are cross-wire monitored
The base module is the electro-mechanical link between the AS-Interface flat cable and the user module (i.e. ASF 2CC).

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www.ipecautomation.com

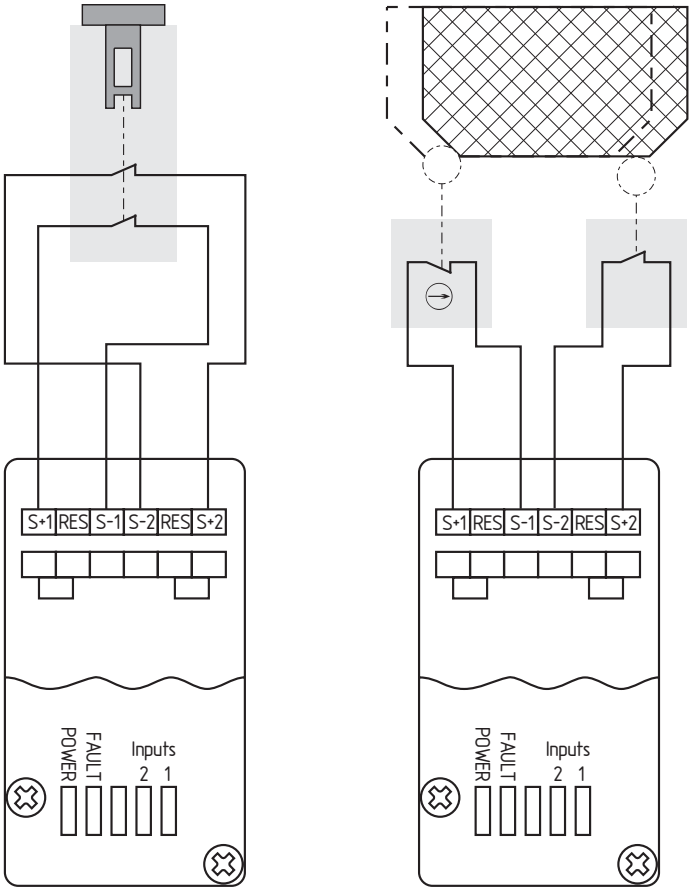
Note

- The wiring diagram is shown with guard doors closed and in de-energised condition.

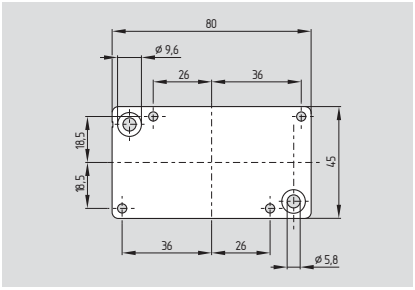
- Please note that for the correct use of the input module there must be two jumpers present (1+2 and 5+6, see electrical connection).

- Monitoring a sliding guard door using two position switches with safety function. The NC contact must have positive break when the guard door is opened.

Wiring diagram



ASF KM1



- Base module
- Base module without address jack
- AS-Interface interface for user module
- Connection of AS-Interface flat cable
- Top hat section rail or screw mounting

Technical data

Standards:	EN 50295
U_e:	26,5 … 31,6 V (according to AS-Interface specification)
I_e:	max. 2 A
AS-Interface specification:	EMS
AS-Interface connection type:	2 flat cables AS-Interface (IDC)
Protection class:	IP 67 to EN60529 (only in combination with ASF 2 CC)
Ambient temperature:	– 25 °C … + 60 °C
Storage and transport temperature:	– 25 °C … + 85 °C
Special features:	2 parallel cable channels for various T- and Cross-junctions
Mounting:	top hat section rail or screw mounting

Approvals

CE

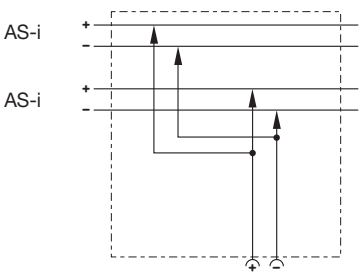
Ordering details

ASF KM 1

Note

The base module is the electro-mechanical link between the AS-Interface flat cable and the user module (i.e. ASF 2CC).

Note



Contacts to module

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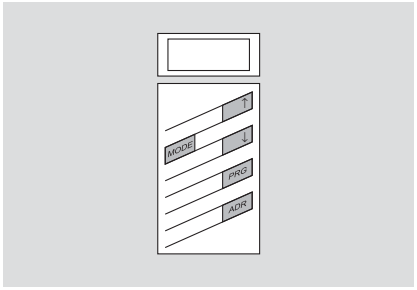
ASF PM



- Hand-held programming device
- Addressing and Programming up to a maximum of 62 Slaves (A/B-Slaves)
- Read/write operation of slave data
- Displaying the IO-code
- Read/write operation of parameter data
- Displaying the address mode / ID-code
- Displaying the peripheral fault flags
- Determining the slave address
- Re-addressing with checking
- Slave connection is short-circuit and overload proof
- Mech. connection with the help of the universal adapter
- Battery charger included with delivery

Technical data

Interface:	AS-Interface, short-circuit- and overload-proof
Operating device:	230 VAC, plug-in charging unit, included in the delivery package
Operating duration:	8 h or > 250 read/write cycles with fully charged batteries
Power supply:	battery mode, charging time before use about 14 h
Display:	LC-display
Keyboard:	5 keys, membrane keys
Protection class:	IP 20
Ambient temperature:	0 °C … + 55 °C
Storage and transport temperature:	– 20 °C … + 55 °C
Dimensions:	80 x 34 x 214 mm

Note

The LCD displays the address, the operating mode or an error code. The AS-Interface hand held programming device will be switched on by pressing the button “ADR”. It shuts down independently after about one minute when not in use.

- Pressing the “ADR” button causes the current slave address to be displayed
- The two keys “ ↑ “ and “ ↓ “ can be used to select the programmable address from the address ring (i.e. 0 ...31, 0 ...31A, 0 ...31B)
- A short key stroke causes the page to turn stepwise, whereas holding down the key causes the pages to scroll continuously (0.5s per address)
- Pressing the “PRG”-key causes the new address to be loaded into the slave
- The correct programmed address is automatically displayed after about 0.5s
- Holding down “ADR” and “PRG” simultaneously will automatically set back the slave address to zero
- Other key combinations do not trigger any further action

Approvals

Ordering details

ASF PM

Note

The LCD displays the address, the operating mode or an error code.

„ ↑ “ button	= increments slave address
„MODE“ button	= changes the working mode
„ ↓ “ button	= decrements slave address
„PRG“ button	= programming of the new slave address
„ADR“ button	= reading a slave address / switches on the device

Error messages

F1: AS-Interface overload
F2: Slave not found
F3: Programming error
F4: Destination address busy
F5: Zero address already occupied
F6: Standard slave found instead of an extended slave
F7: Extended slave found instead of a standard slave
F8: Reception error

LOBAT = **Recharge batteries !**
After the first indication approx. 30 read/write operation are still possible. Load the accumulator only with the charger included within this delivery.

Notizen

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More Details

Detailed technical information at:

www.schmersal.com

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